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EXAMINER	
OLANIRAN, FATIMAT O	
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2614	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,848	BIEGELSEN, DAVID K.	
	Examiner	Art Unit	
	FATIMAT O. OLANIRAN	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6,8-11 and 13-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6,8-11 and 13- 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection necessitated by applicant's amendment.

Claim Objections

1. Claim 8 and 9 are objected to because of the following informalities: Claim 8 line 2,"...the parameters..." lacks antecedent basis. Two parameters are claimed, transmission parameters in claim 1 and object parameters in claim 5. Same for claim 9 line 3. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1, 3-6, 8-11, 13-23,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei (20010007591) in view of Tanigawa (4896304) in further view of Li (5986972).

Pompei discloses a method for processing hypersonic signals performed by a hypersonic signal-emitting device (Fig. 1 and paragraph 39) comprising parameters for

optimal focus on said objects (paragraph 39 and paragraph 54); and transmitting audio information based on the parameters to the plurality of objects detected at locations corresponding to the neighborhoods based on the parameters (paragraph 21 and paragraph 54).

Pompei does not explicitly discloses generating a signal; and forming a plurality of individual transducer outputs of the signal at a plurality of phases, the outputs having a common frequency and amplitude the individual transducer outputs generating wavelets originating at a common origin with reference to a first axis, and the plurality of phases being generated using electronic delays; forming one or more focused hypersonic beams based on the wavelets receiving one or more reflected hypersonic signals; simultaneously detecting a plurality of objects based on the plurality of reflected hypersonic signals ; learning sets of transmission parameters for optimal focus on said objects, the learning including associating sets of transmission parameters with detected objects, storing the sets of transmission parameters and computing a resultant set of transmission parameters based on the stored sets of transmission parameters; generating the plurality of hypersonic wavelets based on the resultant set of transmission parameters associated with one or more neighborhoods for the hypersonic beams.

However Pompei suggests a ranging system incorporated in the audio unit (paragraph 54).

Tanigawa discloses generating a signal; and forming a plurality of individual transducer outputs of the signal at a plurality of phases, the outputs having a common frequency

and amplitude the individual transducer outputs generating wavelets originating at a common origin with reference to a first axis, and the plurality of phases being generated using electronic delays; forming one or more focused hypersonic beams based on the wavelets receiving one or more reflected hypersonic signals; simultaneously detecting a plurality of objects based on the plurality of reflected hypersonic signals associating sets of transmission parameters with detected objects and generating the plurality of hypersonic wavelets based on the resultant set of transmission parameters associated with one or more neighborhoods for the hypersonic beams (Fig. 1-2, 4 and col. 4 line 1-48).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the audio system of Pompei with the object detector of Tanigawa in order to determine the location of a listener and send a message (Pompei par 54).

Pompei in view of Tanigawa do not explicitly disclose learning sets of transmission parameters for optimal focus on said objects, storing the sets of transmission parameters and computing a resultant set of transmission parameters based on the stored sets of transmission parameters.

However Tanigawa discloses resultant transmission parameters of delay, frequency and amplitude col. 4 line 11-20).

Li discloses learning sets of transmission parameters for optimal focus on said objects, the learning including associating sets of transmission parameters with detected

objects, storing the sets of transmission parameters and computing a resultant set of transmission parameters based on the stored sets of transmission parameters (Figure and col. 3 lines 2-30).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the detector of Tanigawa with the beam shaping method of Li in order to generate optimal patterns.

Claim 3 analyzed with respect to claim 1, Tanigawa discloses further comprising: synthesizing one or more hypersonic ping signals; and emitting the hypersonic ping signals as the focused hypersonic beams (Fig. 1-2).

Claim 4 analyzed with respect 1, 3, Tanigawa discloses further comprising: encoding the hypersonic ping signals using one or more frequencies; and directing each of the focused hypersonic beams in different directions, each of the focused hypersonic beams corresponding to one of the hypersonic ping signals (Fig. 1-2).

Claim 5 analyzed with respect to claim 1, Pompei in view of Tanigawa discloses further comprising: setting a coordinate system for a space (inherent); scanning the space based on the coordinate system; and recording object parameters corresponding to detected objects (Pompei: Par 54, Tanigawa ;Fig. 1, 7 and col. 5 line 14-35).

Claim 6 analyzed with respect to claim 5, 1, Tanigawa discloses the coordinate system is suitable for one, two or three dimensional space (Fig. 1, 7 and col. 5 line 14-35).

Claim 8 analyzed with respect to claim 5-6,1, Pompei in view of Tanigawa disclose further comprising: selecting one or more carrier hypersonic frequencies based on the parameters; generating one or more side bands, one side band corresponding to each of the carrier hypersonic frequencies, the side bands being encoded with audio information (par 8 line 4-12 and par 54); generating a plurality of output signals, each of the output signals corresponding to one of the side bands; generating a plurality of sets of phase shifts; generating a plurality of driving signals, each of the driving signals being a combination of the plurality of output signals, wherein each of the output signals is phase shifted by an appropriate phase shift of the set of phase shifts for that output signal; and driving each of the hypersonic wavelets with one of the driving signals (par 8 line 32-46).

Claim 9 analyzed with respect to claim 5-6,1, Pompei in view of Tanigawa disclose further comprising: receiving environment information; and setting the parameters based on the environment information (Tanigawa Fig. 1-2, Pompei par 54).

Claim 10 Pompei in view of Tanigawa disclose computer readable medium encoded to perform the method of claim 1(Pompei par 40 line 12-16).

Claim 11, Pompei discloses a memory (inherent and Fig. 1) a plurality of transducer elements formed into a transducer element array (Fig. 1) and parameters for optimal focus on said objects and a signal generator that generates an output signal to encode audio information for transmission to a chosen location based on the learned parameters (Fig. 1 and paragraph 21 and paragraph 54).
Pompei does not explicitly disclose the transducer elements all having a common position with reference to a first axis; a driver that drives the transducer elements with a signal at a plurality of phases, the driver having a delay processor that forms the phases of the signal causing the transducer element array to form a focused hypersonic beam; a detector that simultaneously detects a plurality of objects based on echo signals received by the transducer element array; a device that learns sets of transmission parameters for optimal focus on said objects, the learning including associating sets of transmission parameters with detected objects, storing the sets of transmission parameters in a memory and computing resultant set of transmission parameters based on the stored sets of transmission parameters;
However Pompei suggests a ranging system incorporated in the audio unit (paragraph 54).

Tanigawa discloses the transducer elements all having a common position with reference to a first axis; a driver that drives the transducer elements with a signal at a plurality of phases, the driver having a delay processor that forms the phases of the signal causing the transducer element array to form a focused hypersonic beam; a detector that simultaneously detects a plurality of objects based on echo signals received by the transducer element array; associating sets of transmission parameters with detected objects and resultant set of transmission parameters (Fig. 1-2, 4 and col. 4 line 1-48).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the audio system of Pompei with the object detector of Tanigawa in order to determine the location of a listener and send a message (Pompei par 54).

Pompei in view of Tanigawa do not explicitly disclose a device that learns sets of transmission parameters for optimal focus on said objects, storing the sets of transmission parameters in a memory and computing resultant set of transmission parameters based on the stored sets of transmission parameters;

However Tanigawa discloses resultant transmission parameters of delay, frequency and amplitude col. 4 line 11-20).

Li discloses a device that learns sets of transmission parameters for optimal focus on said objects, storing the sets of transmission parameters in a memory and computing

resultant set of transmission parameters based on the stored sets of transmission parameters (Figure and col. 3 lines 2-30).
Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the detector of Tanigawa with the beam shaping method of Li in order to generate optimal patterns.

Claim 13 analyzed with respect to claim 11, Pompei in view of Tanigawa discloses, the signal generator comprising: a frequency selector that selects one or more frequencies based on transmission parameters (Tanigawa; Fig. 1 and 4); a delay processor that determines a plurality of delays corresponding to the hypersonic transducer elements that is required to form a focused hypersonic beam directed at a specified direction; and a signal generator that generates a signal that includes selected frequencies, the signal being delayed by a corresponding one of the plurality of delays before driving each of the hypersonic transducer elements through the driver (Fig. 4 and col. 4 line 1-39).

Claim 14 analyzed with respect to claim 11, 13, Pompei in view of Tanigawa disclose the frequency selector selecting the frequency based on a noise environment (inherent to operation of detector) the frequencies being selected to form a code to enhance reception of echoes of the focused hypersonic beam from the objects (Tanigawa Fig. 4 and col. 4 line 1-39).

Claim 15 analyzed with respect to claim 11, Pompei in view of Tanigawa and Li disclose

further comprising: a controller that sets a coordinate system for a space (Li and col. 3 line 1-29), scans the space by directing the focused hypersonic beam to proceed based on a coordinate system, and detects objects based on echoes from the focused hypersonic beam (Tanigawa; Fig. 1-2 and col. 3 lines 1-39).
Tanigawa does not explicitly disclose and records coordinate of detected objects. Examiner takes Official notice on records coordinate of detected objects. Coordinate recording means are well known in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the object detector to include coordinate recording means in order to have means to perform analysis of object location data.

Claim 16 analyzed with respect to claim 15, 11 Pompei in view of Tanigawa disclose a signal generator that generates an output signal corresponding to each of the hypersonic transducer elements based on parameters stored in the memory, the controller specifying a neighborhood for the focused hypersonic beam based on one or more object locations and controlling the signal generator to generate the output signal to encode audio information for transmission to the neighborhood (Tanigawa Fig. 1-2, 4 and Pompei par 54 and par 21 line 1-4).

Claim 17 analyzed with respect to claim 15-16,11 Pompei in view of Tanigawa disclose wherein: the signal generator generating the output signal to include a side band for encoding the audio information; the delay processor generating a set of driving signals,

each of the driving signals being the output signal delayed by one of a set of delays corresponding to phase shifts for each of the transducer elements to form the focused hypersonic beam; and the driver driving one of the driving signals to each of the transducer elements to form the focused hypersonic beam (Pompei Fig. 1 and par 8 line 4-12, line 32-46).

Claim 18 analyzed with respect to claim 15-17,11 Pompei in view of Tanigawa disclose wherein the controller selects one or more carrier frequencies for transmission of a corresponding plurality of audio information (Pompei, paragraph 22, line 21-25), the signal generator generating a plurality of output signals and the delay processor generating a plurality of sets of delays, the delay processor delaying each of the output signals by a corresponding set of delays for one of the plurality of audio information, the delay processor combining all delayed output signals for each of the transducer elements and outputs combined output signal to the driver for driving each of the transducer elements (Pompei, paragraph 22, line 7-15 and paragraph 23, line 9-14).

Claim 19 analyzed with respect to claim 15-18, 11, Pompei in view of Tanigawa disclose the hypersonic transducer transmitting a plurality of focused hypersonic beams, each of the focused hypersonic beams delivering one of the plurality of audio information to a unique neighborhood as based on the delays (Pompei par 39 line 1-20).

Claim 20 analyzed with respect to claim 15-18, 11, the controller receiving environment information, and selecting carrier frequencies and amplitude of the output signals based on the environment information (Pompei par 39 line 11-20, par 54).

Claim 21 analyzed with respect to claim 11 Pompei in view of Tanigawa disclose further comprising: means for scanning a space using a focused hypersonic beam; means for detecting the objects based on echo signals of the focused hypersonic beam (Tanigawa Fig. 1-2, 4); and means for delivering audio information to a neighborhood of detected objects (Pompei par 8 line 4-10, par 54).

Claim 22 analyzed with respect to claim 11, 22, Pompei in view of Tanigawa disclose further comprising: means for scanning the space using multiple focused hypersonic beams; and means for delivering unique audio information to different neighborhoods using multiple hypersonic beams (Tanigawa Fig. 1-2, 4 and Pompei par 39 line 11-20).

Claim 23 analyzed with respect to claim 1, Tanigawa discloses further comprising: receiving a hypersonic signal; and delaying the hypersonic signal by a plurality of phases to select portions of information in the hypersonic signal (Fig. 7 and col. 5 lines 2-30).

Claim 25 analyzed with respect to claim 11, Pompei in view of Tanigawa wherein the transducer element array transmits the audio information to the plurality of objects (Pompei Fig. 1, par 54).

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pompei (20010007591) in view of Tanigawa (4896304) in further view of Li (5986972) in further view of Ariav (4875198).

Claim 24 analyzed with respect to claim 1, Pompei discloses transducers that transmit the audio information to the plurality of objects (par 21, 54).

Pompei in view of Tanigawa and Li does not disclose wherein the same transducers generate wavelets and receive the plurality of reflected hypersonic signals. However Ariav discloses wherein the same transducers generate wavelets and receive the plurality of reflected hypersonic signals (Fig. 1 element 10 and col. 3 line 65-68 and col. 4 line 1-13).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transducers of Pompei in view of Tanigawa with the transducer and switch of Ariav in order to have a more compact and efficient system.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FATIMAT O. OLANIRAN whose telephone number is (571)270-3437. The examiner can normally be reached on M-F 10:00-6 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FO

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614